

Appl. No. 09/754,635

IN THE CLAIMS

1. (Original) A method of generating a random number sequence, particularly in a chip card or smart card, characterized by the steps of (a) scanning the outputs of N_{osz} independent frequency oscillators and buffering corresponding N_{osz} output signals of the N_{osz} frequency oscillators at each clock of a clock signal from an external clock signal source, (b) applying the buffered signals of step (a) to a logic operation assigning a predetermined output value to the N_{osz} buffered signals as input values, (c) generating the parity of a predetermined number N_{log} of output values of step (b) at each N_{log}^{th} clock of the external clock signal, (d) storing a predetermined number N_z of parity numbers in a random-number register, and (e) reading all of the $N_z \cdot N_{log}$ clocks of the clock signal as a random number from the random-number register.
2. (Original) A method as claimed in claim 1, characterized in that the frequency of at least one frequency oscillator is changed and/or modulated in dependence upon an MSB (Most Significant Bit) of a signature register.
3. (Original) A method as claimed in claim 2, characterized in that the frequency of the changed or modulated frequency oscillator is switched between >20 MHz and >40 MHz in dependence upon the MSB of the signature register.
4. (Currently Amended) A method as claimed in any one of the preceding claims Claim 2, characterized in that the frequency of at least one frequency oscillator is selected to be >30 MHz.

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5. (Currently Amended) A method as claimed in ~~any one of the preceding claims~~ Claim 2, characterized in that the frequency oscillators are voltage-controlled or current-controlled.

6. (Currently Amended) A method as claimed in ~~any one of the preceding claims~~ Claim 2, characterized in that in step (a), the output signals of the two frequency oscillators are buffered in a respective flip-flop, particularly a delay flip-flop (D-F/F).

7. (Currently Amended) A method as claimed in ~~any one of the preceding claims~~ Claim 2, characterized in that in step (c) the logic operation is an AND operation (AND), an OR operation (OR), a NOR operation (NOR), an Exclusive-OR operation (XOR), a NAND operation (NAND) or an Exclusive-NOR operation (XNOR).

8. (Currently Amended) A method as claimed in ~~any one of the preceding claims~~ Claim 2, characterized in that the frequencies of the Nosz frequency oscillators are selected to be such that no frequency of a frequency oscillator is an integral multiple of another frequency oscillator or of the external clock signal.

9. (Currently Amended) A method as claimed in ~~any one of the preceding claims~~ Claim 2, characterized in that Nosz is an integer which is larger than or equal to 1, particularly Nosz=2.

10. (Currently Amended) A method as claimed in ~~any one of the preceding claims~~ Claim 2, characterized in that Nlog and Nz are integers which are larger than or equal to 1.

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11. (Currently Amended) A random-number generator, particularly for a chip card or a smart card, ~~particularly for performing a method as claimed in any one of the preceding claims, characterized by comprising~~ a predetermined number Nosz of mutually independent frequency oscillators (10, 12), a predetermined number Nosz of flip-flops (14, 16), in which an output (26) of a frequency oscillator (10, 12) is connected to an input D (30) of a flip-flop (14, 16), a logic circuit element (18) receiving outputs Q (32) of the flip-flops (14, 16) as input values (36, 38) and, in accordance with a predetermined logic operation, assigns an output value (40) to these input values (36, 38), a parity circuit (20) determining the parity of a predetermined number Nlog of output values (40) from the logic circuit element (18), a random-number register (22) which buffers a predetermined number Nz of parity numbers (44) from the parity circuit (20) and supplies them as Nz bit random number, and an input (58) for an external clock signal source which clocks the flip-flops (14, 16), the parity circuit (20) and the random-number register (22).

12. (Original) A random-number generator as claimed in claim 11, characterized in that at least one frequency oscillator (10) is connected to an output of a signature register which applies an MSB (Most Significant Bit) (29) to the frequency oscillator, the frequency of the frequency oscillator (10) changing in dependence upon the MSB (29) of the signature register.

13. (Original) A random-number generator as claimed in claim 12, characterized in that the frequency oscillator (10) connected to the signature register is formed in such a way that it switches its frequency between >20 MHz and >40 MHz in dependence upon the MSB (29) of the signature register.

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14. (Currently Amended) A random-number generator as claimed in ~~any one of claims 11 to 13~~ Claim 11, characterized in that the frequency of at least one frequency oscillator (12) is >30 MHz.

15. (Currently Amended) A random-number generator as claimed in ~~any one of claims 11 to 14~~ Claim 11, characterized in that the frequency oscillators (10, 12) are formed as voltage-controlled or current-controlled frequency oscillators.

16. (Currently Amended) A random-number generator as claimed in ~~any one of claims 11 to 15~~ Claim 11, characterized in that at least one flip-flop (14, 16) is formed as a delay flip-flop (D-F/F).

17. (Currently Amended) A random-number generator as claimed in ~~any one of claims 11 to 16~~ Claim 11, characterized in that the logic circuit element (18) is an AND element (AND), an OR element (OR), a NOR element (NOR), an Exclusive-OR element (XOR), a NAND element (NAND) or an Exclusive-NOR element (XNOR).

18. (Currently Amended) A random-number generator as claimed in ~~any one of claims 11 to 17~~ Claim 11, characterized in that the Nosz frequency oscillators (10, 12) are formed in such a way that no frequency of a frequency oscillator (10, 12) is an integral multiple of another frequency oscillator (10, 12) or of the external clock signal (58).

19. (Currently Amended) A random-number generator as claimed in ~~any one of claims 11 to 18~~ Claim 11, characterized in that Nosz is an integer which is larger than or equal to 1, particularly Nosz=2.

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20. (Currently Amended) A random-number generator as claimed in ~~any one of claims 11 to 19~~ Claim 11, characterized in that Nlog and Nz are integers which are larger than or equal to 1.